The Bulletin
of the
American Society of Clinical
Laboratory Technicians

VOLUME 1 JANUARY, 1935 NUMBER 1A

OUTLINE OF TECHNIQUE OF KAHN TEST*

(STANDARD AND PRESUMPTIVE)

By LOUISE STOCKING, B. A.

Serologist, University Hospital, University of Michigan, Ann Arbor

PRINCIPLES FORMING THE BASIS OF THE KAHN REACTION.

The Kahn test is a precipitation method for differentiating syphilitic from non-syphilitic serum with the aid of a specially prepared cholesterinized alcoholic extract. The test has been developed in conformity with the following requirements for optimum precipitation:

(a) *Antigen.* An optimum concentration of lipoids in the antigen is essential for correct sensitiveness of the antigen with syphilitic serum, excessive or deficient concentration preventing precipitation. This quantitative relation between concentration of an antigen and its sensitiveness makes possible the preparation of antigens of uniform sensitiveness for the Kahn reaction. In spite of variations in antigenic lipoids of heart muscle from which antigens are prepared, the antigens can be brought to the desired sensitiveness by merely adjusting their lipoid concentration.

* This outline is abstracted from "The Kahn Test, a Practical Guide," Williams and Wilkins Company, Baltimore, Maryland.

(b) *Antigen-Salt Solution Suspension.* The proper physical state of the antigen suspension of lipoids is necessary for high sensitiveness. The suspension should contain a minimum amount of physiologic salt solution and the lipoid aggregates must be dispersable in serum. This state of the antigen suspension plays an important role, not only in the sensitiveness, but also in the rapid completion of the Kahn reaction.

(c) *Serum and Antigen Suspension.* A correct quantitative relation between the serum and antigen suspension is essential for proper sensitiveness. This relation may be summarized as follows: (1) The largest volume of antigen suspension with which a given volume of syphilitic serum will react depends on the potency of the serum. The volume of serum must contain a supply of syphilitic units or reagin adequate to react with the antigen suspension. When the latter is in excess, no precipitation reaction takes place. (2) For precipitation reactions with all syphilitic sera, without regard to potency, it is essential that some minimum volume of antigen suspension in relation to the serum volume be employed. There must be a sufficient number of antigen units (lipoid particles) available in the suspension so that the aggregates formed after the contact with the reagin units will be sufficiently large to come within the range of visibility. This relation between antigen suspension and serum enables the use of a proportion of these reagents which is desirable for proper sensitiveness in the Kahn reaction.

(d) *Shaking.* Shaking of the mixture of serum and antigen suspension brings the precipitation reaction to rapid completion. Shaking hastens the collision between the serum-antigen interacting particles and undoubtedly helps to explain the rapid completion of the Kahn reaction.

(e) *Dilution versus Concentration.* Dilution of the mixture of serum and antigen suspension should be minimum to obtain sensitive reactions. Increasing the volume of the mixture with salt solution tends to reduce sensitiveness. Based on this fact the serum is used in the Kahn reaction in an undiluted state and the antigen suspension contains a minimum amount of salt solution.

I. Apparatus.

(1) Test-tubes for performing test (with serum and spinal fluid) are about 7.5 cm. in length and 1 cm. in diameter.

(2) Vials (with straight wall and flat bottom) for preparing antigen suspension are about 5.5 cm. in length and 1.5 cm. in diameter.

(3) Pipettes: 10 cc. graduated to 0.1 cc.; 1 cc. graduated to 0.01 cc., 0.6 cc. (or 0.45 cc.) graduated to 0.15 cc., 0.5 cc. graduated to 0.025 cc. (antigen suspension pipette), 0.25 cc. graduated to 0.0125 cc. (antigen suspension pipette), and 0.2 cc. graduated to 0.001 cc.

(4) The test-tube rack is made of sheet copper, 3 inches wide, 11½ inches long, 2¾ inches high, and consists of three shelves, the upper and middle ones containing three rows of ten holes, each approximately half an inch in diameter. The centre row of holes are offset half an inch.

(5) Shaking apparatus may be of any construction that will hold the test-tube racks employed. The required speed is 275 oscillations per minute, with a stroke of an inch and a-half.

(6) Water-bath (56° C.); centrifuge and centrifuge tubes may be of any make that will be found convenient in the particular laboratory.

II. Reagents.

(1) *Antigen.* For preparation and standardization of antigen for the Kahn test, see The Kahn Test (Williams and Wilkins, Baltimore). An antigen once standardized maintains its titre indefinitely. Antigen should be kept in the dark at room temperature. When subjected to cold, a precipitate may be thrown down, which can be redissolved upon warming in a water-bath. Only chemically clean and dry glass vessels should be used for storing antigen, and the cork stoppers should be covered with thin high-grade tinfoil.

(2) *Serum.* The blood specimen should be centrifuged to remove clot and cells. The serum must be entirely free from cells or other particles. Previous to its use in the test, the serum is heated in a water-bath at 56° C. for thirty minutes. When serum that has been heated is kept overnight in the ice box, reheating for ten minutes at 56° C. is necessary before using in the test.

(3) *Physiologic Salt Solution.* A solution is prepared of 0.9 per cent sodium chloride (chemically pure) in distilled water.

III. Standard (Diagnostic) Test With Serum.

This is a three-tube test. Each tube contains a different proportion of serum and antigen suspension according to the following outline:

Tube	No. 1	No. 2	No. 3
Antigen suspension, cc.	0.05	0.025	0.0125
Serum, cc.	0.15	0.15	0.15

It is well to have everything arranged before mixing the antigen with salt solution for the test. Have racks set up, tubes numbered, and pipettes ready for measuring antigen suspension and serum.

Performance of Standard Test.

(1) *Preparation of Standard Antigen Suspension.* This suspension is best prepared approximately five minutes before the sera are taken from the 56° C. water-bath. Mix antigen with salt solution according to required titre. Thus, if the titre is 1 cc. antigen plus 1.1 cc. normal saline, mix the antigen as follows: (a) Measure 1.1 cc. saline into a standard antigen suspension vial; (b) measure 1 cc. antigen into a similar vial; (c) pour the salt solution into the antigen, and as rapidly as possible (without waiting to drain the vial) pour the mixture back and forth approximately six times to insure thorough mixing; (d) allow the antigen suspension to stand for ten minutes before using. The suspension should not be used after thirty minutes standing.

One may mix more than 1 cc. of antigen with a proportionally larger amount of salt solution, but not less than 1 cc. One cubic centimeter, when mixed with saline, will be sufficient for about fifteen tests; 2 cc. of antigen mixed with saline will be sufficient for about thirty-five tests.

(2) *Controls.* After the antigen suspension has stood ten minutes, measure 0.025 cc. into each of 3 tubes (controls) adding 0.15 cc. saline to one, 0.15 cc. negative serum to another and 0.15 cc. positive serum to the third; shake for 3 minutes, add 0.5 cc. saline to each and examine—the tubes containing positive and negative serums are controls for the sensitiveness of that particular antigen suspension. The saline control is a gauge of the opalescence of the suspension, and should contain no trace of precipitate.

(3) *Measuring Antigen Suspension.* After the control tests have been completed, mix the antigen suspension well and measure 0.05, 0.025, and 0.0125 cc. amounts for each serum, delivering the

suspension to the bottom of the tubes. When employing the standard rack which contains thirty tubes, measure 0.05 cc. amounts in the tubes of the first row, 0.025 cc. amounts in the tubes of the second row, and 0.0125 cc. amounts in the tubes of the third row.

(4) *Measuring Serum.* The serum should be added as soon as possible after the antigen suspension has been pipetted, to avoid undue evaporation from the suspension. When examining large numbers of sera, it is well for one worker to measure the antigen suspension and for another to follow with the sera. Add 0.15 cc. serum to the 0.05, 0.025 and 0.0125 cc. amounts of antigen suspension, and shake the rack of tubes vigorously for 10 seconds to insure thorough mixing of the ingredients. The rack can now be set aside until the remaining racks are ready for the regular three-minute shaking period. When examining a small number of sera, it is well to permit the serum-antigen mixtures to stand for 10 minutes at room temperature before shaking for 3 minutes. This step will render more uniform the examination of small and large numbers of specimens.

(5) *Shaking.* During the three-minute shaking period, it is important, not merely to agitate the rack of tubes, but to see to it that the fluid within the tubes is vigorously agitated. When shaking by hand, one may shake three one-minute periods with short rest periods. When a shaking machine is employed, its speed should be 275 oscillations per minute, with a stroke of an inch and a-half. Shaking by hand should approximate this speed.

(6) *Addition of Saline.* After the tests have been shaken, add 1 cc. saline to each tube of the first row of the rack (containing the 0.05 cc. amounts of antigen suspension) and 0.5 cc. saline to the remaining tubes. Shake tubes sufficiently to mix ingredients.

(7) *Reading of Results.* Results may be read immediately after the addition of saline, but the final report should be based upon the findings after the tests have stood at room temperature 15 minutes after the addition of saline. Optimum reading conditions in each laboratory should be determined by trial. The following points will be found helpful: (a) When utilizing daylight for reading the tests, it is well to have but one source of light coming from a single window immediately in front of the reader. It will be found satisfactory to shade the upper and lower portions of the window, narrowing the source of light to a section several feet in height. Light from any other windows near the reader should be dimmed by lowering the window shades. (b) When holding the rack in front of the exposed section of the window, the definitely

positive and the negative reactions are readily differentiated without lifting the tubes from the rack. (c) In case of weak reactions, examine each tube individually, lifting it several inches above the eye-level and slanting it until the fluid is spread into a thin layer. The precipitate will then become readily visible.

Those preferring magnification will find the substage mirror of the microscope helpful. Place mirror on reading table with concave surface upward. Hold the tube in slanting position two to three inches above the mirror and examine the image in the mirror. Both daylight and artificial light may be employed. One may also utilize an ordinary hand lens for reading the tests. A two- or three-fold magnification will be found satisfactory. Some workers prefer the use of a slit-light arrangement, the source of light being an electric bulb enclosed in a box which is provided with a narrow slit.

As far as possible, workers should limit themselves to one method of reading. The occasional use of magnification by readers who usually do not resort to it will be likely to affect the uniformity of their reading scale. It should be emphasized that certain highly magnifying agglutinoscopes show particles in serum alone, and are thus unfit for use in this test. The magnification must be sufficiently low as to assure opalescent and clear-cut negative reactions, with entire freedom from visible particles.

(8) *Interpretation of Results.* A definite precipitate suspended in a clear medium is read ++++. Proportionately weaker reactions are read +++, ++, + and ± respectively. The final result is the average of the readings of the three tubes, as indicated in Table I.

TABLE I.

Outline of Kahn Test and Interpretation of Results.

Tube	No. 1	No. 2	No. 3	Completion of Test
Serum: Antigen suspension	3:1	6:1	12:1	Tests are shaken three minutes, 1 cc. salt solution is added to first tube and 0.5 cc. to other two tubes and results are read. Final reading after tests have stood for 15 minutes at room temperature.
Antigen suspension cc.	0.05	0.025	0.0125	
Serum (heated at 56° C. for thirty minutes) cc.	0.15	0.15	0.15	

INTERPRETATION OF RESULTS.

Reaction No.				Final result (average of reactions of three tubes)
1	++++	++++	++++*	
2	+++	++++	++++	++++
3	++	++++	++++	
4	+	+++	++++	+++
5	—	+++	++++	
6	—	++	++++	++
7	—	±	++++	
8	—	—	+++	+
9	—	±	++	±
10	—	±	+	
11	—	—	+	—
12	—	—	—	

* Weakly potent sera show most marked precipitation in the third tube because a small amount of reagin reacts best with a small amount of antigen suspension, the relatively larger amounts of suspension in the first two tubes being inhibitory to precipitation.

Strongly potent sera show ++++ precipitation in each tube; but, owing to the different amounts of antigen suspension employed, the precipitates are of unequal bulk, being greatest in the first tube and least in the last tube.

In rare instances, an atypical reaction is obtained in which precipitation is marked in the first tube and weak or negative in the second and third tubes. In such a case, a quantitative test should be made and, if the result is twenty units or more, the qualitative reaction may be considered ++++; if less than twenty units, the results of the qualitative reaction should be averaged.

(9) *Recording Results.* Make a permanent record of findings in all tubes of each test at time of reading. Preferably, the tests should be read independently by two separate workers.

(10) *Procedure with Less Than Three Tubes.* If there is insufficient serum for the three-tube test, examine and report as follows:

(a) If enough serum for two tubes, employ the lesser amounts of antigen suspension; report as a two-tube test.

(b) If enough for one tube, employ the least amount of antigen suspension; report as a one-tube test.

(c) If less than 0.15 cc. serum is available, a one-tube test (micro test) may be made by employing ten parts of serum to one part of antigen suspension. Thus, if 0.05 cc. of serum is available, it is employed with 0.005 cc. of antigen suspension. Report these reactions as micro tests.

IV. Qualitative Spinal Fluid Test.

In this test, the greater part of the spinal fluid globulins is precipitated by means of ammonium sulphate and redissolved in an amount of normal saline equivalent to a tenth of the original spinal fluid volume. The concentrated globulin solution thus obtained is then tested with antigen suspension.

(1) *Preparation of Concentrated Globulin Solution. Reagents.* The reagents needed for the preparation of concentrated globulin solution are: (1) spinal fluid, (2) physiological salt solution, and (3) a solution of saturated ammonium sulphate. This salt must be of the highest purity (Baker's Analyzed or Merck's Reagent).

Procedure. (a) Centrifuge spinal fluid to render it free from cells and foreign particles. (b) Add 1.5 cc. of the clear fluid to a standard Kahn test-tube (7.5 by 1 cm.). (c) To the same tube add 1.5 cc. of a saturated solution of ammonium sulphate. (d) Mix fluids, covering mouth of tube with thumb (protected with rubber if desired) and shake tube back and forth vigorously. The thorough mixing of the spinal fluid and ammonium sulphate is of great importance. Place mixture in 56° C. water bath for fifteen minutes to hasten the precipitation of the globulins. (e) Centrifuge mixture at high speed for about fifteen minutes to completely throw down the precipitated globulins. (f) Remove with capillary pipette the supernatant fluid as completely as possible. This is best accomplished with the aid of a finely drawn capillary pipette. The major amount of supernatant fluid is first withdrawn. The tube is then slanted at an angle of about 45° and the remaining fluid is withdrawn after bringing the opening of the capillary pipette to the point of contact of the globulin precipitate and inner tube wall. It will be found that the last trace of supernatant fluid can be removed by this method. (g) Add 0.15 cc. salt solution to the precipitate and redissolve it by gentle shaking. In adding this salt solution the pipette should be lowered close to the bottom of the tube to avoid washing down the ammonium sulphate adhering to the inner wall. The globulin precipitate will readily dissolve on gentle shaking. This globulin solution is now ready to be tested with antigen suspension.

(2) *Preparation of Antigen Suspension.* Mix salt solution with antigen in the same manner as for the test with serum, according to the required antigen titre for spinal fluid. The antigen suspension should stand ten minutes before its use in the test and should be used within thirty minutes. Control tests should be made, as outlined under "Performance of Standard Test," paragraph (2).

(3) *Measuring of Antigen Suspension.* With a 0.2 cc. pipette graduated to 0.001 cc., measure 0.01 cc. of antigen suspension to the bottom of a standard Kahn test-tube.

(4) *Measuring of Concentrated Globulin Solution.* Measure 0.15 cc. of concentrated solution into the antigen suspension tube, using a 0.2 cc. pipette. Shake tests vigorously for 10 seconds to mix ingredients.

(5) *Controls.* Include positive and negative spinal fluid controls; also observe each concentrated globulin solution to establish that it is free from foreign particles.

(6) *Shaking.* After mixing the concentrated fluid with antigen suspension, shake test at standard speed for four minutes. This period is more desirable than three minutes for spinal fluids.

(7) *Addition of Salt Solution.* Add 0.5 cc. normal saline to tube.

(8) *Reading of Results.* A definite precipitate suspended in a clear medium is read ++++. Proportionately weaker precipitates are read +++, ++ and + respectively.

In this laboratory each spinal fluid is tested in duplicate, employing standard antigen.

Performance of Presumptive Test With Serum

(1) *Preparation of Antigen Suspension.* (a) Pipette 1 cc. of sensitized antigen into an antigen suspension vial. (b) Pipette an amount of physiological salt solution, indicated by the titre of the antigen, into a similar vial. (c) Pour the salt solution into the antigen and, as rapidly as possible, pour the mixture back and forth approximately six times. (d) Allow the antigen suspension to

stand ten minutes at room temperature before using. Set up control tests as outlined under "Performance of Standard Test," paragraph (2).

(2) *Measuring Antigen Suspension.* Measure 0.025 cc. of the thoroughly mixed antigen suspension into a standard tube (7.5 cm. in length, 1 cm. in diameter) with a pipette graduated in 0.025 cc. amounts, delivering to the bottom of the tube.

(3) *Measuring Serum.* Add 0.15 cc. serum—after heating for 30 minutes at 56° C., and mix the serum with the antigen suspension by shaking the rack vigorously by hand for about ten seconds.

(4) *Shaking.* Shake rack in the usual manner for three minutes (oscillation speed 275 to 285 per minute), preferably in a shaking apparatus.

(5) *Adding Salt Solution.* Add 0.5 cc. physiological salt solution to the tube and examine for presence of a precipitate.

(6) *Interpretation of Results.* The results are interpreted on a qualitative basis. Marked precipitation reactions, such as ++++ or +++, are interpreted as positive; moderate precipitation reactions, such as ++ or +, are interpreted as weakly positive, while very weak reactions, such as ±, are classed with the negative reactions.

(7) *Serum Control.* Examine each serum for foreign particles which might give the appearance of a specific precipitate. Particularly in the case of each positive reaction, it is essential to determine that the serum used in the test is free from foreign particles. In using the presumptive test as a check on the regular Kahn test, the same serum control is, of course, sufficient for both methods.

Performance of Presumptive Test With Spinal Fluid.

This test is carried out identically as the standard Kahn test with spinal fluid, except that, instead of using "standard" antigen, "sensitized" antigen is employed.

For a description of the Quantitative Tests, the reader is referred to "The Kahn Test."

A RAPID METHOD FOR THE DECALCIFICATION OF BONE

By M. P. CLAPP, A.B., L.T.

From the Department of Pathology, St. John's Hospital, Brooklyn, N. Y.

This method of decalcification is not new. It may be found in Guyer, Animal Micrology, page 245[1]; in the Microtomist's Vade-Mecum, page 261[2]; and in Mallory & Wright, Pathological Technique, page 51[3]. It has been used in this laboratory over a period of two years with very good results, and since its use is not general in the hospital laboratory, a description of the method and a discussion of its relative merits seem fitting.

The solution used for decalcification is made up of nitric acid and phloroglucin. The phloroglucin acts simply to protect the softer tissues thus allowing the use of a more concentrated solution of nitric acid, and thereby rendering the process of decalcification more rapid. The solution is prepared as follows:

1 gram phloroglucin, C. P., is dissolved with the aid of gentle heat in 100 cc. concentrated non-fuming nitric acid.
10 cc. concentrated nitric acid in 100 cc. distilled water is then added to the above solution.

This whole process should be carried out in a hood and the use of a steam bath is recommended. When freshly prepared the solution has a deep bluish-red color, but on standing for several hours it becomes a clear yellow and is then ready for use.

Bone to be decalcified should be fixed for at least 12 hours in 10% formalin, the exact length of time depending on the size of the piece. For best results it should then be hardened in alcohol for 24 hours (6 hours in 80% alcohol, and 18 hours in 95% alcohol), although this time may be shortened for small pieces. It is then placed in the solution of nitric acid and phloroglucin. Decalcification will be completed in 24 hours in the case of most bones. In some instances the time required may be greater, while developing bone, necrotic bone and very small pieces require even less time, 4 to 6 hours being sufficient in some cases. After decalcification, the bone must be thoroughly washed in running water for

twenty-four hours or more to get rid of every trace of the acid and is then dehydrated, cleared and imbedded in paraffin in the usual manner.

For staining the use of Harris' Haematoxylin and a 0.2½% aqueous solution of eosin has been found highly satisfactory. The sections should be slightly overstained with the haematoxylin, while care should be taken to prevent overstaining with the eosin. Sections prepared in this manner do not fade on exposure to light nor on standing for a long period of time.

This method of decalcification is recommended for use for the following reasons:

1. Its use is simple and good results may easily be obtained.
2. Decalcification occurs in a relatively short length of time with little or no distortion of the softer elements of tissue.
3. Sections of bone thus prepared may be preserved indefinitely without fading.

REFERENCES

[1] Guyer, Michael—Animal Micrology, Chicago, 1930.
[2] Bolles Lee's—The Microtomists Vade-Mecum, Edited by Gatenby, J. Bronte and Cowdry, E. V., London, 1928.
[3] Mallory, Frank Burr and Wright, James Homer, Pathological Technique, Philadelphia and London, 1921.

THE KLINE TEST

By D. TALLON, L.T.

Laboratory Division, Ypsilanti State Hospital, Ypsilanti, Michigan.

Many serological laboratories have conducted studies to determine the relative advantages of the various serological tests for the diagnosis of syphilis. After establishing routine procedures, the methods selected usually enjoy the confidence of the physician and technician.

Smaller laboratories are often satisfied to send their serological specimens to the larger laboratories. There are distinct advantages in doing this, but sometimes the samples must be trusted to the mail, prompt reports sacrificed, and the opportunities for checking identification of specimens forfeited.

The smaller laboratory which does serologic work should, when possible, adopt the test which is most commonly used in the locality. Confidence in the results and knowledge of their interpretation which has grown up among the physicians increases its value. Substitution of another test is justified only after it is shown that the former test is too difficult for the technician or that equipment is required which the small laboratory does not possess.

In our own laboratory, the standard and presumptive Kahn tests are employed. Each specimen is split and sent to the Serological Department of the State Public Health Laboratory. This system provides an excellent check on clerical and technical errors but does not yield as much information as the staff physician desires. Therefore, a survey of other tests is being planned so that supplementary procedures will be available when special study is required. It is hoped to find very sensitive, undersensitive, and quantitative procedures satisfactory for our use.

The first test selected for study was the Kline, which is highly recommended and widely used. It requires so small an amount of serum that there is usually enough remaining so that another qualitative or quantitative procedure can be done without additional venous puncture. It also makes possible a more thorough study of each serum. This advantage has often been overlooked in reports on the Kline test.

The Kline test is frequently of distinct advantage in testing spinal fluids when only small quantities are conveniently available.

The results of comparative Kahn and Kline tests on a limited series of specimens are as follows:

KLINE AND KAHN TESTS ON SEVENTY SERA

Test	*Negative*	*Doubtful*	*Positive*
Kline	49	1	20
Standard Kahn	56	0	14
Presumptive Kahn	49	0	21

KLINE AND KAHN TESTS ON SIXTY-SEVEN SPINAL FLUIDS

Test	*Negative*	*Doubtful*	*Positive*
Kline	44	0	23
Standard Kahn	53	1	13
Presumptive Kahn	50	0	17

SUMMARY

The results of comparative tests of the Kahn and Kline tests as carried out under practical conditions in a small hospital laboratory suggest the following:

1. The Kline test is slightly more sensitive than the Kahn test.

2. The Kline test is entirely satisfactory for routine use in the serological unit of a small hospital laboratory.

Editorial

A NEW DEAL FOR THE LABORATORY TECHNICIAN

In these days of economic strife when all eyes of the nation are centered on our national Capitol, much legislation is classified by that phrase we all know so well—THE NEW DEAL.

May we not, therefore, in keeping with this epochal period, refer to the technician and the New Deal? Has not the foundation been laid upon which our profession can rightfully assume its dignified position in the field of laboratory medicine? To illustrate, we have (1) a National Board of Registry to examine, determine the educational status of, and classify applicants; (2) a national society to promote the field of laboratory procedure, the membership of which comprises those who are registered by the National Board of Registry; and (3) the Official Publication—a medium to convey the findings and advancements of our chosen profession.

It has been the belief of a few that the time was not ripe to inaugurate such progressive steps. However, a majority, realizing the lack of unity, have made courageous advances which have led us from our chaotic existence.

Now that the pioneering is over, figuratively, we believe that a New Deal has been achieved. To substantiate our belief, the welcome received from the medical and technical professions upon the release of the initial issue of this publication was beyond all expectations. We wish to express our sincere thanks to those who have extended words of praise and encouragement and to those who have made our present status one of official recognition.

THE LABORATORY TECHNICIAN AND HIS SPECIAL ROLE—A CHALLENGE

A practical handicap which is daily experienced by the physicians practicing in the rural communities and remote areas, is the difficulty and, often, the impossibility of obtaining the kind of clinical laboratory service and consultation to which their more fortunate brothers in larger cities and medical centers are accustomed and which are considered by them essential in proper practice of medicine.

Despite their hard-earned practical experience and keen clinical judgment, these doctors, many of them, more recent graduates who are trained in the fundamentals of laboratory medicine, truly appreciate the value of good laboratory work in routine clinical diagnosis.

The physicians located in communities within the radius of a few hundred miles of a large city or medical center have found it practical to obtain the assistance of a recognized clinical pathologist. A qualified laboratory technician is thus appointed to serve in the clinical laboratory of the local hospital or clinic, with frequent and ready consultation of a clinical pathologist from the nearby city. Usually, however, for economic and practical reasons, a clinical pathologist is seldom retained, even as a consultant, but a laboratory technician is employed to "run" the laboratory. The practice, while not ideal from the standpoint of either the doctor or the technician, has been recognized as an inevitable yet important factor in practice of medicine in the rural and distant localities. This, indeed, is a challenge which the laboratory technician should accept and cherish not only with a feeling of satisfaction which has come only through demonstration of his worth as an indispensable helper to the clinical pathologist but also with a deep sense of humility and determination to merit the confidence which is implied in this recognition.

The laboratory technician who is denied the opportunity of close association with the clinical pathologist and who is put "in charge" of a small clinical laboratory, often in remote districts, must, first of all, review his own position which the code of ethics clearly defines. He must be ever mindful of his limitations. An earnest and efficient technician is readily appreciated. Temptation to overstep the boundaries of his own sphere of work is always strong and persistent. While intelligence, initiative and independence of thought must guide him in the discharge of his duty, he must be cautious in rendition of his report and refrain from assuming prerogatives of a physician, if forced to do so, as is often the case. Always courteous, tactful and pleasant, the laboratory technician must strive to gain knowledge, cultivate accuracy in technic, efficiency of service and honesty of purpose and be steadfast in his conviction that interpretation or expression of opinion on laboratory findings must come from a licensed physician.

One of the many beneficial results which the organization of the American Society of Clinical Laboratory Technicians has already accomplished is the clear understanding of the place of the laboratory technician in the practice of medicine, particularly, in his relation to the clinical pathologist.

K. I.

News and Announcements

BOARD OF REGISTRY

OF A. S. C. P.

The Board of Registry of the American Society of Clinical Pathologists conducted the semi-annual examination for applicants desiring certificates the last week of October. Almost 200 applicants appeared before the 62 examiners in various sections of the United States and Canada. The examinees will be advised regarding the outcome of the tests within the next 90 days. The questions used in the examinations probably will be published in a future issue of the *American Journal of Clinical Pathology*.

Under the auspices of Doctor Asher Yaguda, the Registry conducted a very successful exhibit at the Congress of the American College of Surgeons, in Boston, during October. Doctor Roy R. Kracke conducted a similar exhibit at the Southern Medical Association meeting in San Antonio, Texas, November 13-16.

The fifth edition of the Registry booklet was published as of November 1, 1934. It contains up to date information regarding approval of training schools for laboratory technicians as well as data concerning the registration and certification of qualified laboratory technicians. Copies will be gladly furnished on request.

The 1934-35 Roster has been distributed to our registrants. There are approximately 2400 names this year, the new additions having secured their certificates by successfully passing the examinations offered by the Board of Registry in October, 1933, and April, 1934.

NATIONAL

Third annual convention, Atlantic City, New Jersey, June 10-11-12, 1935. The Program Committee is now ready to receive titles of papers, and outlines of exhibits. Contributors should correspond with Sr. Joan of Arc Wilson, M.T., Mercy Hospital, Baltimore, Md., General Chairman of Program Committee.

The Society cannot authorize the mailing of the Bulletin unless your dues are fully paid.

State and local or district organizations are invited to send in any news of their meetings, elections, or other items of information. Address to Sister Alma Le Duc, St. Thomas Hospital, Akron, Ohio. These will be printed in each issue as far as space permits.

CONSTITUTION AND BY-LAWS OF THE AMERICAN SOCIETY OF CLINICAL LABORATORY TECHNICIANS

Article 1—Name.

This organization shall be known as The American Society of Clinical Laboratory Technicians.

Article 2—Objects.

The objects shall be to:

(a) Promote higher standards in Clinical Laboratory methods and research.

(b) Elevate the status of those specializing in laboratory technique.

(c) Create closer co-operation between the physician and the technician.

Article 3—Membership.

Section 1. The membership of this Society shall consist of:
(a) Active; (b) Honorary; (c) Corresponding.

Section 2. Active members are those who have successfully met the requirements established by The Board of Registry of The American Society of Clinical Pathologists.

Section 3. Honorary members are those who have distinguished themselves by research or personal sacrifice in the cause of scientific investigation and warrant their recommendation by The Advisory Board. They shall have all of the privileges of active members except of voting and of ho ding office.

Section 4. Corresponding members shall be residents of foreign countries in good ethical standing who have distinguished themselves in worthy scientific endeavor. They shall be exempt from paying dues.

Article 4—Officers.

Section 1. Offices shall be open to active members who shall have been registered with the A. S. C. P. at least three years and who have been members of this Society at least one year prior to taking office.

Section 2. The officers of the Society shall consist of a President, Vice-President, a Secretary, a Treasurer, an Executive Committee and an Advisory Board.

Section 3. All officers except the Treasurer shall be elected by a majority of ballots cast by active members at the annual session.

Section 4. The Treasurer shall be elected by a majority of ballots cast by active members at the annual session every three years.

Section 5. The Executive Committee shall be composed of six

members who shall hold office for three years or until their successors are elected; two to be elected annually.

Section 6. The Advisory Board shall be composed of three active members of the Society who shall hold office for three years (or until their successors are elected) one of which is elected annually; and three representatives of The Board of Registry of The A. S. C. P., to serve in an honorary capacity.

Section 7. Vacancies in the interim on the Executive Committee or the Advisory Board shall be filled by appointment by the President.

Article 5—Duties of Officers.

Section 1. The president shall preside at all meetings of the Society, be an ex-officio member of all committees and perform all other duties that devolve on him by custom and parliamentary usage.

Section 2. In the absence of the president the vice-president shall perform the duties of the president. In the absence of both the secretary shall perform the duties of the president.

Section 3. The secretary shall keep a correct and permaennt record of the meetings and transactions of the Society. He shall provide a copy of this record for all members in good standing, conduct the correspondence and perform such other duties as customarily pertain to the office of secretary.

Section 4. The treasurer shall receive and keep the funds of the Society and pay out same with the consent of the Chairman of the Executive Committee. He shall give satisfactory bond to the Executive Committee the cost of which shall be borne by the Society. He shall serve a term of three years.

Section 5. The Executive Committee shall audit the treasurer's account annually or as often as they deem necessary. The Chairman shall hold the treasurer's bond. The Executive Committee shall have general supervision of the financial affairs of the Society.

Section 6. The Advisory Board shall investigate all applications for membership and submit their recommendations at the annual meeting of the Society. They shall receive and present a report at the executive session with their recommendations.

Article 6—Amendments.

This constitution may be altered by vote of three-fourths of the members voting at a regular meeting in executive session, provided said alteration or amendment has been submitted to the membership by publication or otherwise at least 60 days prior to the annual meeting.

BY-LAWS

Article 1—Applications for Membership.

Section 1. Applications for active membership shall be made on a form authorized by the Society, signed by the applicant and accompanied by the initiation fee of one dollar at least sixty days before the annual meeting.

Section 2. The applicant shall be recommended by two or more members and approved by the local counsellor or the Advisory Board.

Section 3. At least thirty days prior to the annual meeting the secretary shall make available a list of applicants to the members of the Society.

Article 2—Qualifications for Membership.

Section 1. Active members shall be limited to those who have been issued certificates of qualification as Laboratory Technicians or Medical Technologists by The Board of Registry of The American Society of Clinical Pathologists.

Section 2. Applicants for active and corresponding membership approved by the Advisory Board shall be elected by a ballot of three-fourths of the members voting at any annual meeting, except during the years 1934, 1935 and 1936 when the members shall be elected by the discretion of the Advisory Board or their proxy.

Section 3. Honorary members shall be recommended by the Advisory Board and elected as in Section 2 of Article 2.

Section 4. Honorary members shall be limited to ten per cent of the total membership.

Article 3—Dues.

Section 1. The amount of dues payable to the Society is subject to the discretion of the Executive Committee.

Section 2. Upon notification by the Secretary of their election to membership, and annually thereafter, the applicant shall pay annual dues, upon receipt of which the secretary will issue a membership card for the ensuing year.

Section 3. Members in arrears for dues shall forfeit their privilege for voting, for holding office or for recommending applicants for membership. Dues are payable at the annual meeting or within thirty days thereafter. Members eleven months in arrears may be reinstated at the annual meeting upon payment of $1.00 in addition to regular dues; otherwise the member is automatically dropped from the rolls, and may return only by regular application as a new member except under extenuating circumstances as determined by the Executive Committee.

Article 4—Committees.

Section 1. A Board of Counsellors shall be appointed by the President. They shall represent such districts as may be determined. It shall be the duty of the Counsellors to act in the interest of the organization in their respective communities.

Section 2. A Nominating Committee of five representing the country geographically shall be appointed by the President at the opening of the Convention whose duty it shall be to prepare a list of nominees for the various offices for balloting by the Society. Additional nominations may be made from the floor.

Section 3. The president shall appoint a program committee of five representing the country geographically whose duty it shall be to arrange the scientific program of the annual meeting.

Section 4. The president shall appoint a committee of exhibits composed of five members whose duty it shall be to arrange for scientific and commercial exhibits at the annual meeting.

Section 5. The president shall appoint a committee of five representing the country geographically whose duty it shall be to direct the publication of the Society.

Section 6. The president shall appoint a committee of five representing the country geographically whose duties it shall be to direct the research activities of the Society.

Article 5—Quorum.

Section 1. Two-thirds of all active members shall constitute a quorum.

Article 6—Meeting Place.

Section 1. The meeting place of the annual meeting and other meetings of the Society shall be determined by the Executive Committee, notice of which shall be mailed to every member at least 30 days prior to such meetings.

Article 7—Elections.

Section 1. The Society shall elect annually by ballot at an executive session held on the last day of the annual meeting the following officers: President, Vice-President, Secretary, two members to fill the vacancies on the Executive Committee and one member to fill the vacancy on the Advisory Board.

Section 2. The Treasurer shall be elected by a majority of ballots at the annual session every third year.

Section 3. The newly elected officers shall be inducted into office at the conclusion of the meeting.

Article 8—Code of Ethics.

Section 1. The code of ethics of this Society shall be the same as that of The Registry of Technicians of The American Society of Clinical Pathologists.

Section 2. The Executive Committee shall have the power to discipline or expel a member of the American Society of Clinical Laboratory Technicians on the recommendation of the Advisory Board.

Article 9—Standing Rules.

Section 1. The chairman at all regular annual meetings shall first call the members assembled to order in executive session for the purpose of transacting such business and appointing such committees as are herein required, together with the making of other arrangements consistent with conducting the annual meeting.

Section 2. Scientific papers and all discussions shall be limited to twenty minutes (exclusive of the showing of lantern slides). Papers requiring a period of time longer than this shall be read by consent of the majority of the members present, such consent to be solicited by the essayist before beginning the reading of the paper.

Section 3. Members desiring to speak twice must obtain consent.

Section 4. Non-members can be given the privilege of the floor only by consent.

Section 5. All papers read before this Society become the property of the Society, to be published in the official publication, if such exists, except that the privilege for prior publication may be granted by the Executive Committee.

Article 10—Parliamentary Procedure.

Section 1. All parliamentary proceedings at the meetings of this Society shall be governed by Robert's Rules of Order except where otherwise provided.

Article 11—Amendments.

Section 1. Amendments to these By-Laws must be submitted in writing at the opening of the annual meeting and may be voted upon at the executive business session.

Article 12—Order of Business for Executive Session.

Section 1. The order of business shall be as follows:

1. Call to order.
2. Reading of the minutes.
3. Unfinished business.
4. Reports of committees.
5. Election of members.
6. New business.
7. Nominations.
8. Elections of officers.
9. Induction of officers.
10. Adjournment.

STATE

Alabama

The Birmingham Society of Clinical Laboratory Technicians was organized through the efforts of Miss Sarah McCarty, M.T. The first meeting was held on April 26, 1933. The following officers were elected: Miss Sarah McCarty, M.T., President; Mrs. Vivian Herrick, L.T., Secretary; Miss Madie Murphy, L.T., Treasurer. The Society meets the last Thursday in every month.

During the year the following papers were given:

Schilling Count in Disease—Mrs. Irene Glass, L.T.

First National Convention of Technicians—Miss Madie Murphy, L.T.

Endamoeba Histolytica—Miss Irene Satterfield, L.T.

Malarial Parasites—Miss Irene Shipp, L.T.

Review classes for Technicians planning to take the examination of the Registry were held in February and March twice weekly. Classes were conducted as follows: Routine Laboratory Technique and Biochemistry: Miss Sarah McCarty, M.T.; Bacteriology: Mrs. Vivian Herrick, L.T.; Serology: Miss Irene Satterfield, L.T.; Histology Technique: Miss Madie Murphy, L.T.

The present officers are: Miss Nell Stockton, President; Miss Irene Satterfield, Vice-President; Miss Frances Devaux, Secretary, and Miss Irma Jackson, Treasurer.

Illinois

The Chicago Society of Clinical Laboratory Technicians gave a card party on November 10th at the Women's City Club. The purpose of the party was to put funds in the treasury and to help the technicians get better acquainted with one another.

The November meeting of the Chicago Society was held on the 15th of the month. Dr. Robert H. Crawford of the Eli Lilly Company came up from Indianapolis to speak to the technicians. His topic was: *"Recent Discoveries in Anemias and Blood Volume Determinations."*

Ohio

District No. 1 of Ohio sponsored the first State Convention which was held at the Mayflower Hotel, Akron, November 21st. Thirty-six laboratory technicians and four pathologists attended. Of the technicians, twenty-one were registered and the remainder were either student technicians or had just taken the October examination. Nine of the technicians were members of the A. S. C. L. T.

All the registered technicians present joined the State Group. The results of the election were as follows:

President—Miss Martha Klein, R.N., L.T.
Vice-President—Sister Alma Le Duc, Ph.G., L.T.
Secretary—Miss Angela Swoboda, L.T.
Treasurer—Miss Ruth Koons, L.T.

To finance the expenses of the convention and to pay back what was borrowed from the District Association, the technicians of District No. 1 held a card party at the Nurses' Home of St. Thomas Hospital, November 15th, and cleared $35.00, which was more than ample for their needs. The surplus was turned over to the newly formed State Society.

Texas

The first annual meeting of the Texas Society of Clinical Laboratory Technicians was held at the Baker Hotel, Dallas, Texas, October 12 and 13, 1934. An interesting scientific program was presented and the business of the society enacted. Sixteen applications for membership were acted upon favorably, making a total membership of fifty-six.

Officers for the year 1934-1935 were elected as follows:

President—H. A. Bardwell, L.T., R.T.
First Vice-President—Mrs. Pauline S. Dimmitt, Ph.G., M.T.
Second Vice-President—Mrs. Ida F. Levinson, B.A., L.T.
Secretary—Miss Tennie Jordan, L.T.
Treasurer—Geo. T. Thomas, L.T.
Executive Committee—Sister M. Stella O'Sullivan, L.T.; Miss Edith Stinebaugh, L.T.

Washington

From Spokane, Washington, comes the news that the technicians of that city held a meeting for the purpose of forming a local society. Mrs. Jacqueline Bahrenbury, M.T., supervisor of the laboratory of St. Luke's Hospital, writes that they intend to organize in the near future.

Book Review

PRINCIPLES OF BACTERIOLOGY by Arthur A. Eisenberg, A.B., M.D., and Mabel F. Huntly, B.S., R.N. Fifth Edition, The C. V. Mosby Company, St. Louis, 1934.

As Dr. Eisenberg explains in the first edition of his book, it was written especially for the student nurses in the hospital training schools in which he was at that time lecturing in bacteriology. Since then the book has gone through several editions, which shows that it is in continued demand and is giving satisfaction.

This latest edition has been brought up to date in respect to the scientific findings of recent years and has also been reorganized to conform to the outline of the curriculum recommended by the League of Nursing Education.

I am somewhat prejudiced in favor of this book, not only for student nurses but also for laboratory technicians, probably because Dr. Eisenberg was my first teacher in bacteriology when I was taking that subject with the nurses and we used the first edition of his book as a text. I never quite got over referring to his book rather than to a more voluminous work. The last edition shows Miss Huntly's touch and is even more valuable than ever, besides being about twice the size of the first edition, as it now has over 300 pages and is well illustrated.

Sr. A.

BACTERIOLOGY

"Bacteriology is a child of many adoptions, ever precocious, but not yet fully mature. Born with a definite mission to serve and to save, it has recreated pathology, given inspiration and new life to botany and zoology, contributed generously of its substance to agriculture and home economics, and built itself as the framework around which modern hygiene and preventive medicine have been built."—Rettger (Jour. Bact., II, 1918, p. 103).

To the Editor

Atlantic City, N. J.

I have read with great interest the copy sent me of the initial issue of the official publication of your Society. This, I believe, should fill a definite place and should be widely welcomed.

Very truly yours,

Robert A. Kilduffe, M.D.

Philadelphia, Pa.

I greatly appreciated receiving the complimentary copy of the publication of the A. S. C. L. Technicians and would like to suggest that this be designated as the *Bulletin of the American Society of Clinical Laboratory Technicians.*

The first number is quite creditable and I will keep in mind your kind invitation to contribute an article.

Very sincerely yours,

John A. Kolmer.

Letters should be sent to John H. Conlin. Such letters will be printed in forthcoming issues as far as space permits. Writers should sign their names, which will be omitted on request.

"It was the discoveries made by Koch and Pasteur and Lister which supplied the initial great impetus towards the social dominance of medicine."—H. W. Haggard, M. D., Associate Professor of Applied Physiology, Yale University.